Cavitator® Ultrasonic Cleaners

Instruction Manual

(for model # 18G)

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Section 1: Introduction

1.1 Introduction to Cavitator Ultrasonic Cleaners

Instead of a few hundred brush–bristles scratching the surface here and there, ultrasound creates millions of microscopic bubbles that dislodge contamination and foreign matter, even from blind holes, tight joints, pores and places that cannot be reached by laborious soaking and/or scrubbing. Ultrasound produces these tiny cleaning bubbles by a process called cavitation.

Now, using your new Cavitator ultrasonic cleaner, you can take full advantage of that remarkable ultrasonic action called cavitation which gets items cleaner with less effort and time than the next best method: the scrub brush. You now have the energy to reach and clean even the tightest hidden corners between close–fitting parts that are otherwise impossible to clean. You can now loosen even strongly adherent foreign particles and rinse them away in seconds.

1.2 Introduction to This Manual

Read the contents of this manual prior to using your new Cavitator ultrasonic cleaner.

This manual has been written to assist you with the safe operation of the Cavitator ultrasonic cleaner. It is intended for use by the owners and operators of the Cavitator ultrasonic cleaner. The goal of this manual is to direct the correct operation and maintenance of this unit.

The specifications and instructions presented in this manual are in effect at the time of its publication. These instructions may be updated at any time at the discretion of the manufacturer. Please return the self–addressed, postage–paid Warranty Registration Card, so that you can be notified about improvements to this manual.

1.3 Safety Precautions and Service Information

This Cavitator ultrasonic cleaner operates with high voltages. Servicing of this cleaner should be performed by qualified service technicians or it should be returned directly to the factory. To maximize safety during use, the unit should be plugged into a grounded wall outlet of proper voltage only. The AC power cord that is supplied with the ME 18G has a Hospital grade NEMA 5-20 plug and will only plug into a special receptacle wired for 125 VAC, 20 A. Plugging this cleaner into a wall outlet not rated for 20A may result in damage to the 18G cleaner or the wall outlet.

Service may be obtained from the manufacturer by sending the Cavitator ultrasonic cleaner in its original shipping container to: Mettler Electronics Corp., 1333 South Claudina Street, Anaheim, CA 92805, ATTN: Service Department. Telephone toll free: (800) 854–9305. For prompt and efficient service, provide date of purchase, model and serial number of the cleaner and a brief description of the problem.

NOTE: All warranty repairs must be performed by Mettler Electronics Corp. or by a service facility authorized by Mettler Electronics to perform warranty repair work.

In cases where units have exceeded the warranty period, estimates of repairs to be made will be provided at the customer's request. Shipping charges to and from the factory must be paid by the owner, and return method of shipping should be indicated.

1.4 Shipping Damage

Your new Cavitator ultrasonic cleaner is shipped complete in one carton. Upon receipt, please inspect the carton and the unit for visible and hidden damage. If any damage is discovered, hold all shipping materials, including the carton, and call the shipping agent who delivered the unit. The shipping agent is responsible for all damage in transit; therefore, all claims should be filed directly with the agent. The factory will not be responsible for any damage in shipment, nor allow any adjustments unless proper formal claim has been filed by the receiver against the carrier.

The carton in which your new Cavitator ultrasonic cleaner was received is specially designed to protect the unit during shipping. Please retain all shipping materials in the event that you will need to return your unit for servicing.

1.5 Package Contents

Your new Cavitator ultrasonic cleaner comes complete with all the necessary components to perform ultrasonic cleaning. Please note, all Cavitator ultrasonic cleaners are shipped with an instruction manual and one sample each of Cavi–Clean detergent and Cavi–Clean additive.

Listed below are additional items that are included in this shipping carton. An optional spray rinse attachment is also available

ME 18G
• Drain valve supplied with nipple to attach to any hose
• Stainless steel cover for the Cavitator 18G, # 1109
• Stainless steel basket for the Cavitator 18G, # 1110
• Fill hose, # 1159

1.6 Limited Warranty

This Cavitator Ultrasonic Cleaner is warranted against defects in materials and workmanship for a period of one year from date of purchase. During the applicable warranty period Mettler Electronics Corp. will, at its discretion, either repair or replace the Product without charge for these types of defects.

For service under this warranty, the Product must be returned by the buyer within the applicable warranty period to Mettler Electronics Corp. **Shipping charges to Mettler Electronics Corp. under this warranty must be paid by the buyer. The buyer must also include a copy of the sales receipt or other proof of the date of purchase. If the Product is returned without proof of the date of purchase, it will be serviced as an out–of–warranty product at Mettler Electronics Corp.'s prevailing service rates.**

Alteration, misuse, or neglect of the Product voids this warranty. Except as specifically set forth above, Mettler Electronics Corp. makes no warranties, express or implied, including without limitation any implied warranty of merchantability or fitness for a particular purpose, with respect to the Product. If any implied warranties apply as a matter of law, they are limited in duration to one year.

Mettler Electronics Corp. shall not be liable for any indirect, special, consequential or incidental damages resulting from any defect in or use of the Product.

Any legal action brought by the buyer relating to this warranty must be commenced within one year from the date any claim arises and must be brought only in the state or federal courts located in Orange County, California.

Some states do not allow limitations on how long an implied warranty lasts, or the exclusion or limitation of incidental or consequential damages, so the above limitations or exclusions may not apply to the buyer. This warranty gives the buyer specific legal rights, and the buyer may also have other rights which vary from state to state.

Section 2—Operating Instructions

2.1 Precautions

Before you operate your Cavitator ultrasonic cleaner, please review the following precautions.

1. *Ground The Unit*—Grounding the unit is very important. If not grounded, a strong alternating current tingling sensation may be encountered by the operator. For added safety, all electrical equipment must be grounded.
2. *NEMA Three–Prong Plug*—**Caution and Warning—**The AC power cord that is supplied with the ME 18G has a Hospital grade 20A 125 VAC (NEMA 5-20) plug and will only plug into a special receptacle wired for 125 VAC, 20 A. *(Standard AC outlet is rated for 125 VAC, 15 A.)* Each cleaner is equipped with an 8 foot *(2.4 m)* UL approved line cord with a three–prong NEMA plug to provide grounding for the cleaner. Do not use an adapter to defeat the safety features of this plug.

Receptacle Plug

3. *Submersion of Hands in Tank*—Although no physiological harm from ultrasonic energy at these frequencies has been reported, submersion of hands in the tank during operation is not recommended.
4. *Do Not Use Acids*—Do not use acids in the cleaning tank, or place the tank so that ventilation is inhibited. This will prevent undesirable effects during the cleaning operation.
5. *Do Not Use Flammable Liquids*—Ultrasound may enhance the outgassing of flammable liquids, increasing the chance of ignition.
6. *Electric Shock Hazard*—Dangerous voltages are present behind the protective covering. Refer servicing to qualified personnel.
7. *Cleaning Versus Disinfection*—Ultrasound does not sterilize or disinfect objects contaminated with biological materials.
8. *Chlorine Solutions*—Chlorine solutions such as chlorine bleach cause corrosive damage to stainless steel tanks. Do not use chlorine based cleaners.

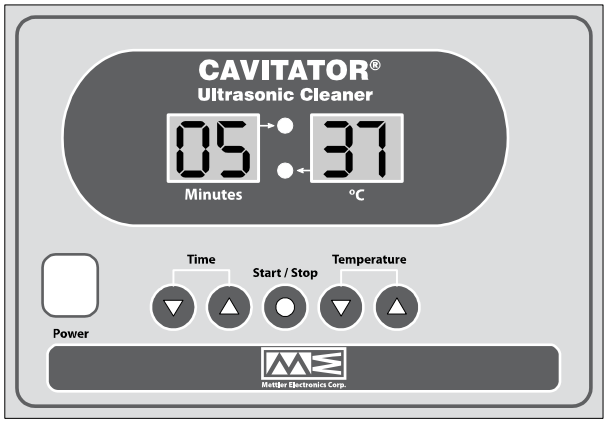


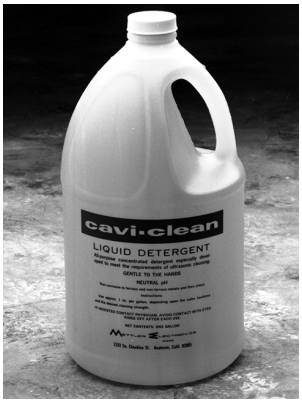
Figure 2.1—Control panel

2.2 Operating Procedures

1. Fill the tank from one third to two thirds full with enough water or suitable solvent to cover the parts. Do not turn on the heater or the cleaner without first filling with cleaning solution.
2. Plug the unit into a grounded Hospital grade NEMA receptacle wired for 125 VAC, 20 A. *(standard AC outlet is rated for 125 VAC, 15 A)*.
3. Turn on the cleaner.
4. Set the cleaning temperature (0~80°C) using the up/down arrows and allow the cleaner to reach set temperature before cleaning. The LED to the left of the temperature window will turn off when the cleaning fluid reaches temperature.
5. Each time the water is changed, add detergent and run the cleaner for five minutes to drive out the air that is dissolved in the water which could interfere with the ultrasonic action.
6. Rinse away excessive loose foreign material before placing parts in the tank. (The spray–rinse attachment, # 510, is designed specifically for this purpose.) This allows the liquid in the tank to stay cleaner for longer usage.
7. Set the time using the up/down arrows (3 to 99 minutes). Press the “Start” button to begin cleaning. You will notice that a “hissing” sound comes from the tank and the surface of the fluid moves slightly. (NOTE: the presence of this “hissing” sound is important. It is a sign that your unit is properly cavitating to produce efficient cleaning bubbles.)
8. Suspend heavy articles using a hanger in the cleaning solution to increase the cleaning effect.
9. After the time set on the timer has elapsed, the cleaner will automatically turn off.
10. Since the cleaners are completely self–tuned and are pre–set and tested at the factory, no adjustments are necessary.
11. If you are not going to use the cleaner for a long time, drain out the cleaning solution and store dry.

2.3 Choosing A Cleaning Solution

1. Selection of a proper detergent is important because some detergents inhibit ultrasonic action and attack the stainless steel tank. To enhance cleaning, use Cavi–Clean for most cleaning needs. Cavi–Clean is an all–purpose concentrated detergent formulated especially to increase the cleaning efficiency of your ultrasonic cleaner. It is gentle to the hands and has a neutral pH. It will not harm metals or their alloys. Blood cutting agents, a rust inhibitor, and an excellent wetting and penetrating agent are among its features.



Cavi–Clean

2. Use approximately 1 part Cavi–Clean in 100 parts of water, 1 or 2 ounces *(30–60 ml)* per gallon *(3.8 liters)*.
3. The choice of cleaning solutions depends upon the nature of the soil and the material to be cleaned. Most solvents and all aqueous solutions will support cavitation at the desirable, powerful low frequencies generated by Cavitator ultrasonic cleaners.

4. Use Cavi–Clean additive to increase cleaning action to remove metal oxides, stains and to loosen plaster. Important: use only as an additive to Cavi–Clean detergent because its use with certain other detergents might cause damage to the cleaning tank or the parts being cleaned.

   Add 1 to 3 teaspoons *(0.4 to 1.1 cc per liter)* Cavi–Clean additive per gallon *(3.8 liters)* of water with Cavi–Clean detergent.

   Caution: Repeated usage might remove plating from plated parts and damage stainless steel instruments. Ultrasonic tank damage can be avoided by cleaning in a supplementary glass container *(See "Cleaning in Beakers" below)*. Extra precautions should be utilized with dissimilar metals. Use the additive only when necessary because Cavi–Clean detergent will meet most cleaning requirements.
5. While certain solvents will not support direct cavitation at these preferred frequencies, more than ample power for effective cleaning is transmitted through the metal parts, provided they rest on the bottom of the cleaning tank.
6. Remember: Do not use acid or chlorine solutions *such as chlorine bleach* in the cleaning tank.

2.4 Cleaning In Beakers

Many acid solutions and strong solvents may be successfully used by cleaning in auxiliary beakers. The beakers containing the special cleaning solutions can rest at the bottom of the main cleaning tank. Enough water containing detergent should be maintained so that the beakers are in at least one inch of water. These glass beakers may be purchased at any laboratory supply company. Do not use plastic containers for cleaning in your ultrasonic cleaner.

2.5 Service and Maintenance

1. Inspect the power cord and its plug to assure that it is in working order.
2. Check the mesh enclosure of the cooling fan and remove any accumulated dust.
3. Make sure the supporting plate is not leaking.

Section 3—Specifications

Model #:	ME 18G
Input:	110 VAC, 60 Hz, 20 A
Tank Dimensions:	
Inches:	21.6 x 15.7 x 11.8
cm:	55 x 40 30
Overall Dimensions:	
Inches:	27.5 x 19.75 x 22.5
cm:	70 x 50 x 57
Weight:	
Pounds:	73
kg:	33
Tank Capacity:	
Gallons:	18
Liters:	68
Ultrasonic Power:	1,000 Watts
Heating Power:	1,400 Watts
Total Power:	2,400 Watts
Nominal Main Frequency:	40 kHz
Timer:	1 - 99 minutes
Temperature:	0 ~ 80 °C

Section 4—Accessories

4.1 Ordering Information:

Cavitator ultrasound cleaning products and accessories are available from Mettler Electronics authorized distributors. For information regarding either Mettler products or a distributor near you, please call toll free, (800) 854–9305 or phone (714) 533–2221 in areas outside the continental United States. Ask for Customer Service. Mettler Electronics is open from 7 AM until 5 PM Pacific Time for your convenience. You can also order supplies or additional accessories by visiting us at www.mettlerelectronics. Customer service can also be reached via email at mail@mettlerelectroncis.com.

4.2 Cavitator Ultrasonic Cleaner Accessories

Catalogue #	Item Description
1109	Stainless steel cover for the Cavitator 18G
1110	Stainless steel basket for the Cavitator 18G
1159	Extra 5' (1.5 m) long fill hose
510	Spray Rinse Attachment

4.3 Cavi–Clean Liquid Detergent and Additive

Catalogue #	Item Description	
1812	Cavi–Clean ultrasonic cleaning detergent, case of four,	one gallon containers
1816	Cavi–Clean ultrasonic cleaning additive, case of six, one	pound bags